PATTERN INSPECTION METHOD AND ITS APPARATUS

This application claims priority to Japanese Patent Application No. 2003-065886 filed on March 12, 2003.

BACKGROUND OF THE INVENT ION

The present invention relates to an inspection method and apparatus for comparing an image of an object, which is obtained by using light, laser beams, or the like, and a reference image to detect a fine pattern defect, a foreign body, or the like from a difference between the images. In particular, the present invention relates to a pattern inspection apparatus that is designed preferably for performing visual inspection of a semiconductor wafer, a TFT, a photomask, and the like, and a method therefor.

As an example of a conventional technique for comparing an inspection object image and a reference image to detect a defect, reference is made to a method described in JP-A-05-264467. This method involves sequentially sensing images of an inspection object specimen using a line sensor, in which repetitive patterns are arranged regularly, comparing the sensed images with images delayed by a time for establishing a repetitive pattern pitch, and detecting a non-coincident part of the images as a pattern defect.

Such a conventional inspection method will be described in conjunction with the visual inspection of a semiconductor wafer, as an example. In a semiconductor wafer which serves as an object of inspection, as shown in Fig. 6, a large number of chips having an identical pattern are arranged regularly. As shown in Fig. 7, each chip can be roughly divided into a memory mat section 71 and a peripheral circuit section 72. The memory mat section 71 consists of a set of small repetitive patterns (cells), and the peripheral circuit section 72 basically consists of a set of random patterns. In general, in the memory mat section 71,